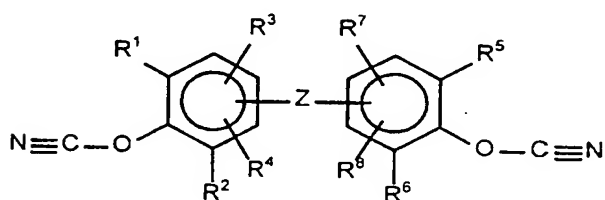


Claims:

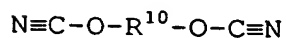
1. Optical waveguide system or waveguide structure comprising at least (a) a first material which is a poly(perfluorocyclobutane), and in direct contact to this material (b) a second material which is a polycyanate resin, wherein the said polycyanate resin has been (co)polymerized from at least one difunctional cyanate of formula I:



(I)

wherein R^1 to R^8 are independently from each other hydrogen, optionally substituted C_1 - C_{10} alkyl, C_3 - C_8 cycloalkyl, C_1 - C_{10} alkoxy, halogen, phenyl or phenoxy, the alkyl or aryl groups being unfluorinated, partly fluorinated or fully fluorinated, with the proviso that (I) carries at least 1 fluorine atom, and Z is a chemical bond, SO_2 , CF_2 , CH_2 , CHF , $CH(CH_3)$, isopropylene, hexafluoroisopropylene, n- or iso- C_1 - C_{10} alkylene which may be partly or fully fluorinated, O, NR^9 whereby R^9 is hydrogen or C_1 - C_{10} alkyl, $N=N$, $CH=CH$, $C(O)O$, $CH=N$, $CH=N-N=CH$, alkyloxyalkylene having 1 to 8 carbon atoms, S, or $Si(CH_3)_2$.

2. Optical waveguide system or waveguide structure as claimed in claim 1, wherein the said polycyanate resin has been copolymerized from at least one dicyanate of formula I and at least one difunctional cyanate of formula II:

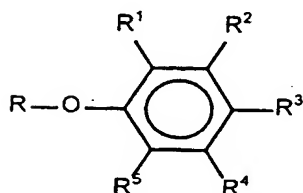


(II)

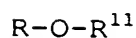
wherein R^{10} is $C(R')_2-R''-C(R')_2$, wherein each R' is,

independently from the other, hydrogen or fluorine or an optionally substituted, preferably fluorinated alkyl or alkenyl group, and R" is a non-aromatic hydrocarbon group or may have an arylene structure,
 5 with the proviso that (II) carries at least one fluorine atom.

3. Optical waveguide system or waveguide structure as claimed in claim 1 or 2, wherein the said polycyanate resin has been copolymerized from at least one dicyanate of formula I,
 10 optionally at least one difunctional cyanate of formula II, and at least one of the following compounds:
 monocyanates having formula IIIa or IIIb:



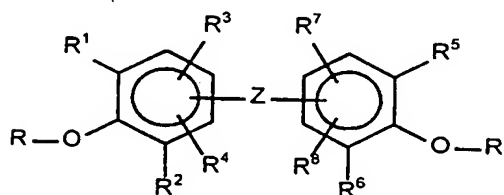
IIIa



IIIb

wherein R¹ to R⁵ are as previously defined for the dicyanate of formula I, R is N≡C- and R¹¹ is a straight, branched, or
 20 cyclic non-aromatic hydrocarbon radical or a non-aromatic hydrocarbon radical comprising a cyclic structure,

phenols having either formula IIIa above or formula IIIc:



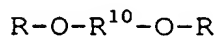
IIIc

wherein Z and R¹ to R⁸ are as defined above for formula I and

R is hydrogen,

monoalcohols having formula IIIb wherein R^{11} is as defined above, and wherein R is hydrogen,

non-aromatic dihydroxy compounds having formula Vd



Vf

wherein R is hydrogen and R^{10} is as defined for the dicyanates of formula IV above,

and

glycidethers of formulas IIIa to IIIc wherein R is glycidyl, the other radicals being as defined above.

4. Optical waveguide system or waveguide structure as claimed in any of claims 1 to 3, wherein both the first and the second materials are in the form of a thin layer, the layers directly adhered to each other.
5. Optical waveguide system or waveguide structure according to claim 4, wherein either the waveguide is made of the first material and at least one of the buffer layer and the cladding layer is made of the second material, or the waveguide is made of the second material and at least one of the buffer layer and the cladding layer is made of the first material.

* * *